Effects of foreign acquisitions on financial constraints, productivity and investment in R&D of target firms in China

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Effects of Foreign Acquisitions on Financial constraints, Productivity and Investment in R&D of Target Firms in China

by

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Abstract

This paper examines whether foreign acquisitions lessen financial constraints, improve investment in research & development (R&D) and productivity of the target firms in China based on a sample of 914 cross-border mergers and acquisitions (CBM&A) over the period of 1994-2011. Using investment to cash-flow sensitivity to measure financial constraints, we find that foreign acquisitions in China are associated with a reduction of target firms' financial constraints, irrespective of the ownership type of the target firm. However, the extent of financial constraint reduction is pronounced for non-SOEs compared to state-owned enterprises (SOEs). This study also provides evidence that foreign acquisitions improve Chinese target firms' productivity and investment in R&D.

Keywords: Cross-border mergers and acquisitions; Financial constrains; productivity; R&D investment, China

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1. Introduction

The economic and institutional reforms in the emerging countries, particularly, Brazil, Russia, India and China (BRIC), are widely seen as pivotal in attracting foreign direct investment (FDI) inflows into these countries. FDI inflows into BRIC which stood at 4,712.6 million US dollars in 1990 increased to 285,325.2 million US dollars in 2013 (UNCTAD, 2015). In similar vein, cross border mergers and acquisitions (CBM&A)[1] which constitute a dominant share of FDI and a popular strategy for penetrating into foreign markets are on the rise (Du and Boateng, 2015). According to the UNCTAD (2015), CBM&A inflows into China increased from 1,340 million US dollars in 1990 to 50,148 million US dollars in 2013, being the highest among the BRIC countries. It is argued that cross-border investment inflows do not only bring in the private and needed capital but have implications for productivity and investment in research & development (R&D) of the host country firms (Miozzo et al., 2016; Harrison et al., 2004; Harrison and McMillan, 2003). This is especially important for emerging country firms which typically face financial constraints that curtail their ability to undertake value enhancing projects, invest in R&D, and to upgrade existing facilities to enhance productivity (see Almeida et al., 2004).

[1] We define CBM&A in this study as a takeover of assets and liabilities of Chinese target by a foreign company or a foreign company and Chinese company come together to merge. Following UNCTAD (2000), we place emphasis on the transfer of control of assets and operations from a local firm to a foreign firm, with the former becoming an affiliate of the later or two companies with different nationalities coming together with the foreign company exercising some control over operations and decision making.

While recent studies have examined whether acquisitions can potentially mitigate financial constraints of target firms and increase the number of investments (see Almeida et al., 2011; Khatami et al., 2015; Erel et al., 2015) in the context of developed countries, relatively little evidence exists in emerging countries (Cull et al., 2015). The few studies that examine the financial constraints in emerging countries focus on domestic firms with no study on the effects of foreign acquisitions on financial constraints, R&D and productivity of target firms.

However, Peng (2008) and Antal-Mokos (1998) indicate that acquisitions are, particularly, sensitive to the efficiency of the financial markets and the market for corporate control. Acquisition transactions greatly rely on institutional framework that ensures transparency, certainty, and contract enforcement (Peng and Heath, 1996). Yet institutions (formal and informal), market for corporate control and corporate governance systems in emerging countries are weak compared to developed countries (Xu, 2011; Du and Boateng, 2015). Lin et al. (2009) argue that the weakness of institutions in emerging countries may lead to smaller, more volatile, and less liquid markets, which reduces the potential for acquisitions. More importantly, Xu (2011); Guler and Guillen (2010) point out that, for technology spillover to occur, a set of institutions should be in place to facilitate access to resources, technology and improve productivity. For example, contract law and private property rights enforcement protect the interests of acquiring firms and reduce the risk of dissipation of technology in the host country and are important for investment in technology (Xu, 2004). Unfortunately, institutions in emerging countries are weak with many firms controlled by dominant shareholder often the state thereby exacerbating agency problems.

The above is against the backdrop that studies examining FDI spillovers via technology transfer and productivity of which CBM&A is a dominant part have produced mixed results (see Sinani and Meyer, 2004; Betrand, 2009; Miozzo et al., 2016). While it is argued that acquisitions may lessen the target firms' financial constraints and increase investment in R&D and productivity, policy makers have raised concerns about the beneficial effects of acquisitions to the target firms (Miozzo et al., 2016; Bertrand, 2009). For example, the Chairman of the Welcome Trust indicated that past acquisitions of Pfizer of USA have mostly led to a substantial reduction in R&D activity of target firms (Financial Times, 8 May 2014). Indeed, the effects of foreign acquisitions on financial constraints of the target firms and the extent to which acquisitions can alleviate financial constraints and improve R&D activity and productivity of target firms have not been systematically examined in the emerging country environment where institutions are weak.

In this paper, we investigate whether foreign acquisitions lessen financial constraints, and improve productivity and investment in R&D of the target firms in emerging countries. We use a sample of 914 inward CBM&A in China which occurred over the 1994 - 2011 period to analyse whether Chinese firms have financial constraints before being acquired, and to what extent do foreign acquisitions mitigate financial constraints and enhance investment in R&D and productivity of target firms in the post-acquisition period.

The choice of China for an empirical examination of financial constraints is based on the following reasons: First, China is a major player in the global market for corporate control

and attracts over 45 and 50 percent of the volume and value of acquisition activities by foreign firms occurring in BRIC countries (UNCTAD, 2015). Despite this, the past empirical efforts have paid no attention to foreign acquisitions in China, perhaps due to paucity of data. CBM&A research in the context of China has focused exclusively on acquiring firms (see Boateng et al., 2008; Rui and Yip, 2008; Du and Boateng, 2015). With the availability of data in respect of target firms, this study provides us with rare opportunity to analyse the effects of foreign acquisitions of Chinese targets on financial constraints, investment in R&D and productivity.

Second, Chinese firms like their counterparts in other BRIC countries are faced with financial constraints (Hericourt and Poncet, 2009; Cull et al., 2015). However, financial constraints faced by Chinese firms have several dimensions and may differ from that found in developed markets. Financial constraints in China appear to be driven by both market and non-market factors such as central and local government ownership of firms with associated interferences which distort credit allocation in China (Poncet et al., 2010; Cull et al., 2015). Many of the resources and organisation structures of local firms are built around nonmarket forms of transactions thereby making it harder for acquirers to evaluate properly target firms for post-acquisition restructuring with far-reaching implications for productivity (Tong et al., 2008). Institutions in China are not only weak but also the government is deeply involved in business through ownership and control of firms in both financial and non-financial sectors (Du and Boateng, 2015; Hitt et al., 2004). Consequently, instead of government protecting private property rights and enforcing contracts by separating itself from businesses, there is no

clear separation between Chinese government and businesses (Xu, 2011). The above has implications for firm investment strategies and productivity because host country institutions affect foreign firms' organisational capabilities to transfer technology, access external resources and take risks in the host country (Guler and Guillen, 2010). Although, over the past two decades, China has reformed its enterprises through privatisation and reduce restrictions in the banking sector, Boateng, Huang and Kufuor (2015) suggest that problems still remain in the banking sector. The above considerations motivate the choice of China for this study.

The results of this study indicate that foreign acquisitions in China are associated with a reduction of target firms' financial constraints, irrespective of the ownership type of the target firm. However, the extent of constraint reduction is pronounced for non-SOEs (i.e. domestic and foreign private-owned enterprises) compared to state-owned enterprises (SOEs). Our results also suggest that the foreign acquisitions increase productivity and investment in R&D of the target firms. The study contributes to the literature in the following ways. First, we contribute to the large body of literature on capital market imperfections and firm investment in emerging country context where massive institutional reforms have taken place over the past two decades. In particular, we shed lights on financial constraints and how ownership type of banks in emerging markets affect efficient allocation of capital in formal financing sector. This is significant in that the ability of Chinese financial system to allocate capital more efficiently and guarantee fair access to finance for all companies is a key yardstick for measuring the success of the reforms carried out so far. Second, obtaining technological know-how and developing technical capabilities are increasingly important for sustainable

economic growth in emerging economies. Acquisitions (market for firms) are an important part of business process of redeploying resources into more productive uses compared to the market for some resources (Gupta and Govindarajan, 2000). By examining the effects of acquisitions on target resources (financial constraints), investment in R&D and productivity, we provide evidence on efficiency gains derived from foreign acquisitions in an environment where institutions are weak.

The remainder of this article proceeds as follows. The next section reviews the literature on the effects of foreign acquisitions on the target financial constraints, productivity, R&D investments and develops the research hypotheses of the study. Section 3 presents the sample selection as well as the analytical method used in this study followed by the discussion of the results. The final section concludes the paper and discusses the implications of the study.

2. Literature Review and Hypothesis Development

2.1 Theoretical background and financial constraints

The neoclassical models of investment assume that capital markets are perfect (Modigliani and Miller, 1958). However, the assumption of perfect market is inconsistent with what happens in the real world where the cost of internal and external finance diverge (Laeven. 2003). Carpenter and Petersen (2002), Laeven (2003), Poncet et al. (2010) and Cull et al. (2015) point out that the financial constraints stem predominantly from capital market imperfections such as information asymmetry, weak institutions and corporate governance systems. In this regard, a firm's investment decisions reflect both market and non-market

imperfections in that market (Carpenter and Petersen, 2002). However, prior studies such as Sufi (2009) and Erel et al. (2015) have utilised capital market theory as dominant explanation for firms' financial constraints and ignored the role of host government and institutions.

In this study, we employ capital market theory in addition to institutional theory because government influences are stronger in emerging economies than in developed countries (Hoskisson et al., 2000). We argue that the role of government and host country institutions are important in explaining financial constraints, investment in R&D and productivity. Institutions defined as "the rules of the game" influence the strategies, structures, and competitiveness of firms (North, 1990). Guler and Gullen (2010) and Meyer and Sinani (2009) express similar view and indicate that host country institutions affect multinational enterprises' (MNEs) organisational capabilities to access external resources, strategies and their ability to take risks in a host country. Foreign acquiring firms often encounter unfamiliarity and discriminatory costs associated with their foreign operations (Acemoglu and Johnson, 2005). We expect such costs to be low if a host country has implemented a set of investment-supporting institutions, such as property rights regulations with strong legal enforcement regime which constrain expropriation of firms' strategic assets, and facilitate market transactions (Acemoglu and Johnson, 2005; Acemoglu et al., 2003).

On the other hand, under-developed institutions generate hazard of expropriation, operational risks and transactional uncertainty thereby hampering technological spillover and

consequently productivity (Acemoglu and Johnson, 2005; Estrin and Prevezer, 2011). In emerging countries, institutions are weak and corporate governance systems are characterised by ownership concentrated in the hands of the central and local governments (Ayyagari et al., 2012; Cull et al., 2015). The concentrated ownership in the hands of the state leads to potential agency problems and the effects depend on the way the key institutions work in the country in question (Estrin and Prevezer, 2011).

2.2 Effects of Foreign Acquisitions on Target R&D and Productivity

A number of researchers have documented that foreign direct investors play an important role in alleviating financial constraints by bringing scarce capital into the host country firms (Harrison et al., 2004; Héricourt and Poncet 2009; Erel et al., 2015; Khatami et al., 2015). If acquisitions indeed ease financial constraints of the target firms, then the intriguing question that follows is that, do the acquisitions lead to an increase in investment in R&D and improve productivity of the relieved firms? This is an important question because researchers have raised concerns about whether acquisitions benefit the target firms in terms of R&D and productivity improvements (Miozzo et al., 2016; Bertrand, 2009). The results thus far regarding the target's productivity, investment in R&D appear mixed (Ahuja and Katila, 2001; Roller et al., 2001; Nocke and Yeaple, 2008). On one hand, Cassiman et al. (2005) argue that CBM&A increase the potential to generate scale and scope economies in R&D, thereby enhancing R&D investment and productivity. Supporting this line of thinking, Hagedoorn and Duysters (2002); Bwalya (2006); Bertrand (2009); Stiebale and Reize, (2011); Cull et al.

(2015) contend that FDI via acquisitions are associated with increased investment in R&D and improvement in productivity of the target firms. Overall, the above studies suggest that acquisitions affect both innovative inputs and outputs (Hit et al., 1991). Prominent among the factors that facilitate technology spillover and improve productivity include the quality of human capital that shape a firm's ability to adapt new ideas and techniques (Agarwal et al., 2014). Siegel and Simons (2010) therefore argue that high quality management can help implement technological and organisational change thereby increasing productivity. Jovanic and Rousseau (2008); Holmes and Schmitz (1990) found some support for the relationship between the quality of management and post-acquisition productivity. Others such as Cohen et al. (1990); Agarwal et al. (2014); Vaara et al. (2012) contend that that target firm's ability to assimilate new ideas depends on their absorptive capacity, host country features and culture.

On the other hand, some researchers argue that CBM&A can also lead to a reduction in R&D investment and productivity because of reduced competition and reorganisation of business units which tend to disrupt established routines of the acquiring firm and those of the target firms (Haspeslagh and Jemison, 1991; Ahuja and Katila, 2001; Ranft and Lord, 2002; Puranam et al., 2006). Another strand of literature also points out that acquisitions may lead to the innovation activity of target firms being reduced and shifted away, thereby depriving the local economy of strategic technology and technological spillovers (UNCTAD, 2005). This study therefore sheds lights on whether acquisitions relieve financial constraints and facilitate the financing of R&D and improve productivity.

2.4 Acquisitions and Financial Constraints

Prior studies have documented that the governments in developing countries play a bigger role in the allocation of financial resources and channel a large share of capital to state owned enterprises (SOEs) (Ayyagari et al., 2012; Cull et al. 2015). The intervention of government in capital allocation in developing countries leads to financial frictions. Consequently, Laeven (2003) asserts that firms in these markets face high financial frictions which lead to financial constraints. Harrison et al. (2004); Aghion et al. (1999) support this view and point out that financial constraints are likely to be more severe in developing countries compared to developed countries because of pervasive government intervention that tend to crowd out a large proportion of firms from external financing from the state owned banks. A number of studies such as Poncet et al. (2010); Hericourt and Poncet (2009); Cull et al. (2015); Ayyagari et al. (2010) have rendered some support and indicated that firms in developing countries face financial constraints due to poor access to finance. We expect Chinese target firms to financial constraints consistent to the above findings. We therefore hypothesise that:

Hypothesis 1a: Chinese target firms are faced with financial constraints prior to acquisitions.

In addition to the above argument, La Porta et al. (2002); Sapienza (2004) document that, state ownership of firms in both financial and non-financial sectors is one of the important features of developing countries. However, state ownership of firms can generate corruption, misallocation of resources and financial constraints (Banerjee, 1997; Sapienza, 2004; Stein, 2003). This is consistent with the view that agency problems directly influence the allocation process of financial resources to the firms (Poncet et al., 2010).

In the context of emerging economies, due to the weaknesses in institutions and corporate governance systems, the distorting effects of government ownership on firm's financing decisions appear more pronounced (Behr et al., 2013). For example, Cull et al. (2015) and Poncet et al. (2010) found that credit allocation in China is driven by government intervention through state-owned banks which give preferential treatment to SOEs compared to non-SOEs. However, these studies were based on 2005 data and it is pertinent to point out that more reforms have taken place in China over the last 10 years. We expect the massive financial reforms/liberalisation undertaken in China over the last decade to reduce financial constraints. This because it is argued that reforms reduce financial frictions by improving in corporate governance system and scaling down of government directed-credit programme (see Laeven, 2003). We therefore hypothesise that:

Hypothesis 1b: The financial constraints of non-SOEs will not vary from SOEs in China.

Recent studies in the context of developed countries document that M&A has an effect on target firm's financial constraints after acquisition. It is argued that being part of a larger organisation following an acquisition can improve financing through better access to the capital markets, and also the possibility of a reallocation of capital across divisions (Stein, 2003). For example, Erel et al. (2015) examined 5,187 European acquisitions which occurred from 2001 through 2008 and reported that, subsequent to an acquisition, the level of target cash holdings, the sensitivity of cash holdings to cash flow, and the sensitivity of investment to cash flow declined, while the quantity of targets' investments increased after the acquisition.

Using a sample of US acquisitions, Khatami et al. (2015) rendered some support to the view acquisitions improve financially constrained firms' ability to access capital through a better re-allocation of resources.

In the context of developing countries, prior studies such as Hericourt and Poncet (2009); Harrison and McMillan (2003); Boateng and Glaister (1999) found that foreign investment inflows bring in the needed capital and other resources to these countries. Hericourt and Poncet (2009) point out that because of Chinese government interference in the allocation of capital to achieve social and political objectives, capital mobility within China appears low. Huang (2003) therefore argued that foreign investors provide a viable alternative of equity capital to alleviate financial constraints and facilitate firm growth. In the light of the above argument, we expect CBM&A to bring in capital funds following the purchase by foreign acquirers thereby alleviating domestic firms' financial constraints. Consequently, we put forward the following hypothesis:

Hypothesis 2: Foreign acquisitions will alleviate Chinese target firms' financial constraints.

2.4 Alleviation of Financial Constraints; R&D and Productivity

Global capital flows are associated with a reduction in firm-level financing constraints (Harrison et al., 2004) which may facilitate greater internal financing for R&D (Hall, 2002). However, prior literature indicates that the relationship between foreign acquisitions and an increase in R&D investment appears mixed (Stiebale and Reize, 2011). On one hand, it is

argued that M&A can lead to reduction in R&D because of reduced competition. In particular, research evidence (e.g., Kumar, 2001; UNCTAD, 2005) suggests that there is a danger that acquiring firms may centralise R&D in their home country to avoid the costs of coordinating dispersed R&D centres. Consequently, innovative activity of the target firm could be reduced or shifted away, thereby reducing the potential of R&D as a source of innovation and technological spillover in host country. Hitt et al. (1991) have rendered some support to the conclusion that M&A decrease R&D investment.

On the other hand, Cassiman et al. (2005) contend that CBM&A enable scale and scope economies in R&D efforts and facilitate reorganisation of the combined firms' R&D efforts. For example, Larsson and Finkelstein (1999) note that CBM&A enable access to a wider set of resources residing in different country boundaries. Vaara et al. (2012) found evidence that CBM&A are positively associated with R&D. Similarly, Bertrand (2009) found that acquisitions of French firms and firms in OECD countries by foreign acquirers increase R&D spending of the target firms. In acquiring China Biopharmaceuticals (CHBP), NeoStem, a US-based developer of stem cell therapies indicated that the acquisition would enable the combined entity to collaborate and increase R&D efforts in China (Industry Watch, 2009, p.27). This supports the contention that foreign acquisitions tend to increase investment in R&D in host countries. Girma et al. (2015) point out that to accelerate the pace of technological advancement from abroad, the Chinese government gives a number of incentives to foreign firms engaged in innovative acquisitions and this has led to increase in

R&D activities in China. We expect that foreign acquisitions should have positive impact on R&D budgets and this lead to our third hypothesis.

Hypothesis 3: Foreign acquisitions will increase R&D investments of Chinese target firms.

Prior literature documents that financial constraints impact on firm's productivity. It is argued that financial constrained firms in emerging countries lack the capacity and are unable to make investments essential for firm growth and increase productivity (Ayyagari et al., 2010). Agarwal et al. (2014) found that lack of access to sources of external finance represents a major obstacle to the absorption of productivity spillovers originating from foreign firms in China. However, this study focused on productivity spillovers arising from the operation of foreign owned firms rather than foreign acquisitions. We argue that foreign acquisitions can potentially mitigate such constraints and enable the acquirer to exploit its ownership advantages in foreign markets as posited by the eclectic paradigm (Dunning, 1977; 1981). Thus the possession of ownership advantages by foreign acquiring firms (intangible and tangible resources) acts as a source of innovation for target firms and has implications for target firms' productivity. Theoretically, as multinational firms possess these firm-specific assets which can be transferred to the acquired firms abroad, the technology spillover is expected to raise efficiency and productivity of target firms (Bwalya, 2006). Conyon et al. (2002); Bertrand and Zuniga (2006) found that acquisitions to have positive and significant effect on productivity in the UK and OECD countries respectively. We therefore expect that acquisitions in China will lead to productivity gains.

Hypothesis 4: Foreign acquisitions improve Chinese target firms' productivity.

3. Data and measurements

3.1 Data

To investigate the effects of foreign acquisitions on Chinese target firms, we use a sample of foreign acquisitions that occurred in China during the period of 1994 - 2011. The data relating to acquiring and target firms were derived from the Chinese Stock Market & Accounting Research database (CSMAR) and Wind Merger & Acquisition databases. Macroeconomic data was collected from the World Bank database. CSMAR and Wind Merger & Acquisition databases include domestic and CBM&A cases. These databases provide information of the CBM&A transactions such as deal status, dates of announcement and deal completion dates. To be included in the sample, we restrict the sample to acquisitions of Chinese target firms by foreign acquirers. Acquisitions must have pre- and post-acquisition information for primary and control variables. The restrictions led to a usable sample of 914 CBM&A of Chinese target firms. We collected the primary and control variables using panel data in sample. The observation years of the variables for the full sample consist of three years pre- acquisition and three years' post-acquisition information. The period is long enough to observe changes in financial constraints, investments in R&D and productivity. Table 1 provides details of the variables definitions and data sources of the sample used in this study.

(Insert Table 1 here please)

3.2 Measuring Financial Constraints

Prior studies indicate that financial constraints occur when financial frictions prevent firms from undertaking all desirable investments. While a large body of literature has been devoted to the identification of the level of financial constraints faced by firms, there appears to be no consensus on which measure is the best proxy (Khatami et al., 2015; Erel et al., 2015). However, Cull et al. (2015) note that countries with lower level of financial development such as China, the investment-cash flow sensitivity is a reasonable indicator of financial constraints. Consequently, we employ investment-cash flow sensitivity approach as one of the measures of financial constraints. Further we utilise the Whited and Wu (WW) index to determine the level of financial constraints faced by different firms. To check the robustness of the results, we also use target firms' cash holding as a proxy of financial constraints to analyse the effects of foreign acquisitions on Chinese target firms. We briefly describe the proxies of financial constraints used in the previous literature below.

Investment-cash flow sensitivity

Introduced by Fazzari et al. (1988), investment-cash flow sensitivity as an indicator of financial constraints involves estimating the sensitivity of a firm's investment to its cash flows. Using dividend payout, Fazzari et al. (1988) exogenously separated firms into financially constrained and unconstrained firms. They point out that firms paying low dividends have financial constraints and show high investment-cash flow sensitivity. In comparison, firms

paying high dividends have no financial constraints and exhibit low investment-cash flow sensitivity. Thus they concluded that firms with high investment-cash flow sensitivity are typically cash constrained. A number of studies such as Carpenter and Petersen (2002), Moyen (2004) Xu et al. (2013) have used the investment-cash flow sensitivity to measure the financial constraints of firms in both developed and developing country context. To examine a firm's investment to cash flow sensitivity, we use the following specification:

$$I_t = \beta_0 + \beta_1 CF_t + \beta_2 Controls_t + \epsilon \quad (1)$$

Where *I* is the dependent variable of a firm's investment expressed by gross investment to total assets ratio at the end of year *t*, *CF* is a firm's cash flow expressed by cash flow to total assets ratio at the end of year *t*. The control variables contain target country level variables and firm level variables that vary across specifications. Since we have data in respect of three years of pre- and post-acquisition, a panel of firm-years are estimated in the regression. We controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database.

Whited and Wu (WW) index

Whited and Wu (2006) constructed an index of the external finance constraints of firms using an investment Euler equation. As an alternative index of financial constraints, Whited and Wu (2006) argue that their index is considered much better way of estimating a firm's degree of

financial constraints because the index is based on the characteristics associated with external financial constraints. Prominent among researchers who have used WW index as a measurement of financial constraints include Li (2011) and Gomes et al. (2006). We use the estimated coefficient by Whited and Wu (2006), WW index are constructed based on following equation:

$$WW = -0.091 * \frac{CF_t}{TA_{t-1}} - 0.062 * Divpos_t + 0.021 * \frac{LD_t}{TCA_{t-1}} - 0.044 * TA_t - 0.035 * SG_t + 0.102 * ISG_t \quad (2)$$

Where $\frac{CF_t}{TA_{t-1}}$ is cash flow CF_t deflated by beginning of year total assets TA_{t-1}, $Divpos_t$ equals value of one if the firm pays cash dividends on the year *t*. $\frac{LD_t}{TCA_{t-1}}$ is long term debt LD_t deflated by beginning of year total current assets TCA_{t-1}, TA_t is natural logarithm of total assets adjusted for inflation rate, SG_t is firm's sales growth, ISG_t the firm's 3-digit industry sales growth. This study uses WW indices as another measurement to identify the level of financial constraints.

3.3 Sample Characteristics

Table 2 reports the event sample summary over the 2004-2011 period. Panel A of Table 2 reports the acquisitions by year. The largest share of the acquisitions (15.3%) occurred in 2008, followed by 13.5% in 2006 and 12.0% in 2011, with 103 (11.3%) occurring in 2009. The lowest number of acquisition events occurred in 1994 and 1996. The ownership type of Chinese target firms is classified into four categories: central government SOEs, local

government SOEs, foreign owned firms and domestic private owned firms representing non-SOEs. Local government SOEs constitute the largest ownership type of the sample firms (35.7%), followed by domestic private owned firms (31.0%) and central government SOEs (25.2%). The rest represents foreign owned firms in China (8.2%). The classification enables us to investigate the relationship between the ownership type and financial constraints given that prior studies suggest that SOEs have better access to bank loans administered by the big five state owned banks compared to private and foreign firms. Moreover, SOEs have different motivations (that is, political and social objectives) rather than maximisation shareholder wealth. We further grouped SOEs into central government SOEs and local government SOEs as central government SOEs tend to be key strategic government industries, while the local government SOEs tend to concentrate on improving local economy (Wu et al., 2012). Panel C of Table 2 reports our sample distribution by industry. The table shows that our sample covers all major CSRC industries, with slightly more than half of M&A events clustering in the manufacturing sector (50.3%). This is followed by real estate (12.3%) and then the transportation, storage and post industry (8.3%). These top 3 industries account for about 71% of total M&A deals. The rest of the industries include the retail and wholesale industries (7.8%), financial industry (5%), information transmission, computer service and software industries (3.5%), power, gas and water industries (3.1%).

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(Insert Table 2 here please)

3.4 Summary Statistics

Table 3 provides summary statistics of characteristics of the full sample, showing that each variable used in our analysis varies across firms. The mean ratio for the key variable *I* (gross investment to total assets) is 0.118, while the mean value of total assets (TA) is 9.586. The mean ratio of cash flow to total assets (CF) is 0.843 with a maximum value of 4.468 and minimum value of 0.024. The average operating leverage value is 1.375, implying that Chinese listed acquired firms generally have high percentages of fixed operating costs and lower variable costs. The average log value of expense to revenue is -0.018. There are seven dummy variables in analysis including one financial constraint measurement (DWW), four ownership types (central SOE, local SOE, foreign and private), R&D expenditure and the observation years after the acquisition (*After*). The average value of productivity is 5.953 and the Tobin's Q mean value is 1.542. The average GDP growth and domestic credit are 2.971 and 2.215 respectively.

(Insert Table 3 here please)

4. Results and Discussions

Following Buckley et al. (2007) we use OLS model to estimate the relationship between inward FDI and spillover effects in China based on the consideration that the heteroskedasticity[2] is expected to be widespread because of differences in the size of firms

[2] The Breusch-Pagan test confirms the presence of heteroskedasticity and p-values are significant at 1% level. Consequently we used robust standard errors in regressions reported in Tables 4-10.

sampled together.

4.1 Financial constraints and target firms before acquisitions

In order to examine the existence of pre-acquisition financial constraints of Chinese target firms and whether these financial constraints change after the acquisition, we divide the full sample into pre- and post- acquisition groups. These two groups are analysed separately.

4.1.1 Investment to cash flow Sensitivity

Based on equation 1, we use the investment-cash flow sensitivity to measure the financial constraints of the target firms before acquisition. The idea behind investment-cash sensitivity approach is that, under frictionless capital markets, investment should be a function of the value of the investment opportunities and independent of the firm's financial position (Fazzari et al., 1988). Consequently, if a firm is not financially constrained and has enough financial funds, it would undertake all value enhancing investment opportunities. However, a financially constrained firm would choose among value increasing investments because of limited cash flow availability (Fazzari et al., 1988).

Table 4 reports the estimation of the investment to cash flow sensitivity of the target firms prior to foreign acquisitions. Focusing on the cash flow, the results indicate that the cash flow (CF) variable in all the four regression models have positive and statistically significant coefficients suggesting that target firms in China were financially constrained before acquisitions. The results are in line with the findings of Harrison et al. (2004) and Aghion et al. (1999) who found target firms to be financially constrained due to weak institutions and high

level of financial frictions which restrict access to external financing to firms in developing countries. Hypothesis 1a is therefore supported. Regarding the control variables, we find the coefficients of ownership type, Tobin's Q (a proxy for growth opportunities) and leverage are statistically and positively significant in the regressions. However, the expense to revenue is negatively related to firm's investment.

(Insert Table 4 here please)

4.1.2 Investment-cash flow sensitivity partitioned by level of financial constraints

To observe whether a firm's cash flow correlate with investment and whether investment-cash flow sensitivity vary across different levels of financial constraints, WW index is used. We employ the following equation to examine the different levels of financial constraints.

$$I_t = \beta_0 + \beta_1 CF_t + \beta_2 FC_t + \beta_3 CF_t * FC_t + \beta_4 Controls_t + \epsilon \quad (3)$$

We add measurements of financial constraints (FC_t) and interaction term ($CF_t * FC_t$) in Equation 1. Financial constraints (FC_t) is WW index. A dummy variable is created for WW index in regression. In estimation, the firms are partitioned into higher financial constraint group (FC_t=0) and lower financial constraint group (FC_t=1) by using the median value of WW index in the observed sample. The coefficient β_3 interprets whether investment-cash flow vary with different levels of financial constraints.

Table 5 documents the following results. The cash flow is positively and significantly correlated with investment confirming our results in Table 4. We find that the coefficients β_3 of *DWW*CF* are negative and significantly different from zero. The interaction term of coefficient β_3 indicates the different investment-cash flow sensitivities between more financially constrained firms (higher value of WW index) and less financially constrained firms (lower value of WW index). The theoretical explanation of investment to cash flow sensitivity is that the financially constrained firms tend to exhaust all their cash flow to satisfy capital spending on investment. Thus, these firms are more sensitive to the volatility of cash flow availability than high dividend paying firms caused by information asymmetries (Fazzari et al., 1988). The criteria to determine a firm's sensitivity of investment to cash flow is based on the information on firm size, age, dividend to income ratio and accessing to capital markets, which can be regarded as firms' capability on obtaining external funds in the markets (Guariglia, 2008). However, the WW index measuring firms' degree of external financial constraints is based on indicators relating to firms' financial statistics such as total assets and cash dividends. Table 5 analyses the difference in sensitivity of cash flow of investment on the basis of the degree of internal financial constraints faced by firms. The values of interaction term β_3 are negative and range between -0.1115 and -0.1160, indicating that financially constrained (higher WW value) firms rely more on their internal cash flow when they make investment decisions. Firms facing higher sensitivity of investment to cash flow have a relatively high level of financial constraints measured by WW index.

(Insert Table 5 her please)

The results in Table 5 report the effects of ownership types on investment cash flow sensitivity. Columns 1 and 2 of the table reportthe result of central and local government SOEs whereas private and foreign owned enterprises are reported in columns 3 and 4. The results show that, central government SOEs and local government SOEs have significant and positive coefficients, while private owned firms and foreign owned firms have negative and significant influence on investment-cash flow sensitivity. Hypothesis 1b is therefore not supported indicating that the financial constraints faced by non-SOEs are more severe compared to SOEs. The results that different ownership types have different effects on investment-cash flow sensitivity appear interesting suggesting SOEs are less financially constrained compared to non-SOEs. The results suggest that SOEs tend to have cash to undertake value-creating investment opportunities whereas foreign and private firms do not. The findings may be explained by the fact that SOEs in China tend to obtain favourable treatment in credit allocation from state-owned banks compared to non-SOEs. The results support the conclusion drawn by Cull et al. (2015) who reported that government ownership of banks has distorting effects on financial allocation of resources and that SOEs are less financially constrained than domestic and foreign private enterprises in China. It is important to point out that the results that foreign private enterprises in China are financial constrained appears contrary to the findings of Poncet et al. (2010) who reported that foreign firms in China are not financially constrained. Perhaps this finding may be explained by the financing

policies adopted by foreign firms not to borrow in international capital markets to manage currency and interest rate risks in China.

Overall, the results imply that after two decades of reforms in the banking system and institutions, China has not been able to create a level playing field for SOEs and non-SOEs in the formal financing sector and banks appear to discriminate against the private sector in terms of access to credit. From theoretical perspective, financial constraints arise from imperfections in the market, weak institutions and poor corporate governance system. It was therefore expected that massive government reforms and financial liberalisation in China would improve institutions and reduce financial frictions by scaling down government directed credit thereby lowering financial constraints. However, it appears that the reforms have not fully achieved the above goals.

4.2 Financial constraints and target firms after acquisitions

Table 6 reports the results of whether the target firms' constraints are alleviated after the foreign takeover. The results indicate that coefficients of cash flow are all negative and insignificant suggesting that foreign acquisitions in China generally reduce the target firms' financial constraints but not significantly. The findings provide some support to prior research evidence in developed countries such as Erel et al. (2015) and Khatami et al. (2015) which indicate that foreign acquisitions lessen financial constraints. Foreign acquirers bring additional sources of external funds and free up scare domestic credit for firms that have been

crowded out of the domestic capital markets (Harrison et al. 2004). The results show that foreign ownership can improve Chinese target firms' financial conditions. Our results shed light on the importance of foreign capital inflows as a mechanism to remedy the inefficiency and discrimination in Chinese capital market. Arguably, the foreign acquisitions may be a catalyst to reforms of financial markets in China, improve business environment and firm efficiency. The coefficients of control variables, namely Tobin's Q, expense to revenue and ownership type are insignificant. However, leverage appears significant at 10% level in one of the four regression models.

(Insert Table 6 here please)

We carried out further analysis on whether investment-cash flow sensitivity vary across different degrees of financial constraints post-acquisition by adding one proxy of financial constraints (WW index). Table 7 shows that the coefficients for DWW*CF are insignificant after controlling the ownership type, leverage, expense to revenue and Tobin's Q. The results suggest that there are no significant differences in the sensitivity of investment-cash flows among different levels of financial constraints as measured by WW index. Regarding the cash flows, all the coefficients have negative and insignificant effect on financial constraints.

(Insert Table 7 here please)

4.3 Effects of Foreign acquisition on target firms' R&D activity

To test the effects of foreign acquisitions on the target firms' R&D, a dummy variable of R&D

expenditures is used as a measurement of target firm R&D activity. A firm's R&D expenditure equals to 1 if it has positive R&D expenditure at the end of year, and 0 equals otherwise. The dependent variable is R&D expenditure. Table 8 reports the effects of foreign acquisition on target firm R&D expenditure. In each specification, the coefficient of *After* is positive and significant at 1% significant level. The coefficient values are between 0.0397 and 0.0643, suggesting that the R&D expenditures increased by 3.97% to 6.43% following the foreign acquisition. Hypothesis 3 is therefore supported. The results appear consistent to the conclusion drawn by Vaara et al. (2012) Bertrand (2009); Bertrand and Zuniga (2006) who found evidence that CBM&A are positively associated with R&D and increase R&D spending of the target firms. The results show that CBM&A enable scale and scope economies in R&D efforts, reduce financial constraints by improving target firms' access to international capital markets thereby increasing investment in R&D. Another plausible explanation may be that foreign firms engaged in cross-border acquisitions tend to have ownership advantages such as superior technology, and this may provide target firms with opportunities to improve the quality of product technology and profits through an increase of R&D activity to gain competitive advantage over domestic rivals (Bandick et al., 2014).

(Insert Table 8 here please)

4.4 Effects of Foreign acquisition on target firms' productivity

Table 9 reports the results of the foreign acquisitions' effect on Chinese target firms' labour productivity. Following Conyon et al. (2002), firm productivity is measured by sales per employee. We find the coefficient of the variable *After* in our regression models to be significant and positively related with firm productivity. The coefficient values of *After* variable range from 0.0383 to 0.0436, indicating that the foreign acquisitions increase Chinese target firms' productivity by 3.8% to 4.4%.

(Insert Table 9 here please)

The increase in the Chinese target firm's productivity following foreign acquisition is consistent with the conclusion reached in the studies of Conyon et al. (2002); Girma and Corg (2007) who found acquisitions to exert positive impact on the labour productivity of UK target firms. The results suggest that acquisitions enable the transfer of not only financial resources but other valuable resources like high level technology, new ideas and management skills from parent companies to their affiliates to improve productivity. The findings reinforce the view that financing constraints are an impediment to the investment, productivity and the growth of firm.

4.5 Robustness Check: Target firms' Cash holding and Financial Constraints

In order to check the robustness of our results, we employ a full sample of Chinese inward

CBM&A data, three years before and after the acquisitions, to test whether Chinese firms' financial constraints have been mitigated after foreign acquisitions. One way of assessing whether the target financial constraints are lessened by acquisitions is to observe managerial actions regarding the firm's financial position (Almeida et al., 2004; Fazzari et al., 1988). Almeida et al. (2004) argue that value maximisation leads managers to employ financial policies that ensure that the most important investments continue to be financed. Managers of financially constrained firms therefore tend to hoard cash and hence cash holding should be higher (Fazzari et al., 1988). A reduction of cash holdings of target firm following an acquisition would suggest that the target firm's financial constraints are lessened. Therefore the level of cash holding is associated with financial constraints.

To test the effects of foreign acquisitions on target cash holding after acquisition, we add a dummy variable *After* which take a value of 1 after the acquisition consistent to the study of Erel et al. (2015). We also define the deal completion year as post-acquisition firm-year observations. To test this hypothesis, the following equation is estimated to predict the quantity of cash being held by the target firms after the acquisition:

$$Cashholdings_t = \beta_1 + \beta_2 After_t + \beta_3 Control_t + \varepsilon_t \quad (4)$$

The dependent variable is cash to total assets ratio. *After* is a binary variable that takes a value of 1 after the acquisition. We employ firm level controls and two foreign country macroeconomic variables that vary across specifications and are potentially related to firm's

growth opportunities: cash flow, Tobin's Q, leverage, total assets, expense to revenue ratio, total assets squared, GDP growth and domestic credit provided by financial sector.

Table 10 presents the results of the cash holdings positions of the target firms after the foreign acquisitions of the target firms. The coefficients of *After* in the models 1-6 are negative and significantly different from zero suggesting that Chinese target firms reduce their cash holdings ranging between 0.68% and 0.93% after acquisition. The results support the hypothesis that target firms' financial constraints are reduced following the acquisitions. The results confirm our earlier findings that Chinese target firms are financially constrained before the CBM&A, however the constraints are reduced after acquisitions. The findings are robust after controls.

(Insert Table 10 here please)

5. Conclusion

This study examines the effects of foreign acquisitions on financial constraints, investment in R&D and productivity of target firms in China. While a number of studies have examined the consequences of CBM&A by acquiring firms from emerging countries, we know little about the effects of foreign acquisitions on target firms in emerging countries. Utilising a unique and more recent data containing pre-acquisition and post-acquisition information of Chinese target firms over the period of 1994-2011, we find that Chinese target firms are financially constrained before acquisitions. The financial constraints appear severe for private and foreign owned targets compared to SOE targets. Our results are robust to an alternative

measure of financial constraints (cash holding) and to a number of controls, including leverage, Tobin's Q, expense to revenue ratio, growth GDP and domestic credit.

The results suggest that, Chinese firms just like other firms in BRIC countries appear to suffer financial constraints due to the dominance of state-owned banks which tend to discriminate against private firms in credit allocation. We also find that foreign acquisitions mitigate financial constraints of target firms indicating that acquisitions improve target finances through better access to both domestic and international capital markets and the possibility of a reallocation of capital across divisions as pointed out by Stein (2003). The implication here is that despite two decades of financial reforms in China, non-SOEs still encounter discrimination in formal financing. The underlying theoretical reasons for financial constraints in emerging markets and discrimination against non-SOEs in the formal financing sector are due to imperfections in the market, weak institutions and poor corporate governance system. Financial constraints arise if there are financial frictions and weak institutions (Laeven, 2003) hence host country institutions matter. However, it appears that financial liberalisation and other reforms carried out in emerging markets to reduce financial frictions have not gone far enough. For example, state ownership of firms and government involvement in businesses appear pervasive in emerging countries. This is further compounded by weak institutions and poor corporate governance systems thereby exacerbating agency problems resulting in increased financial frictions. We suggest Chinese government should therefore pay more attention to the nature and scope of financial sector

and enterprise reforms carried out so far. More importantly, we urge more reforms to improve the regulatory institutions and corporate governance system to make the financial system a level playing field for both private sector and state enterprises. Specifically, the level of state ownership of banks should be reduced and private ownership of banks encouraged as private sector constitutes an engine of growth in all economies.

Regarding the impact of foreign acquisitions on target firms' R&D and productivity, our results suggest that acquisitions lead to increase in R&D expenditure and productivity of the target firms. The positive impact of foreign acquisitions on R&D investments and productivity may be due to the alleviation of financial constraints, enabling more human capital and other investments in innovative activities and improvement in target firms' productivity.

From economic policy standpoint, the results of this study raise important issue that CBM&A bring in the capital and other resources which are often scarce in developing countries and aid firms' technological progress and productivity in the host country. The results suggest that senior managers in China should favour the use of CBM&A as firm strategy as market for firms (acquisitions) rather than market for resources appears to be an important vehicle for firms to acquire innovation, improve productivity and enhance the competitive advantage of firms in China.

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Table 1: Measurement and Sources of Variables

Variable	Definition	Sources
Firm level variables		
Total assets(*TA*)	Log value of total assets	Wind database
Gross investment/Total assets (*I*)	(Fixed assets-lagged fixed assets+ depreciation)/Total assets	Wind database
Cash flow/Total assets(*CF*)	(total income+ depreciation)/Total assets	Wind database
Tobin's Q	Total market value of firm/Total asset value of firm	CSMAR database
Leverage	(net income+ income tax expense+ financial expense + depreciation+ intangible assets amortization + long-term prepaid expenses)/(net income+ income tax expense+ financial expense)	CSMAR database
DWW	A dummy variable is equal to 1 if a firm's WW value is larger than the sample median, and 0 otherwise.	Wind database
Age	The number of years the firm has been listed	
Expense to revenue	Log value of the ratio of firm operation expenses to revenue	
Central SOE	Variable value is equal to 1 if a firm's ultimate owner is central government, and 0 otherwise.	Wind database
Local SOE	Variable value is equal to 1 if a firm's ultimate owner is local government, and 0 otherwise.	Wind database
Private	Variable value is equal to 1 if a firm's ultimate owner is individuals and non-government entities, and 0 otherwise.	Wind database
Foreign	Variable value is equal to 1 if a firm's ultimate owner is foreign companies, and 0 otherwise.	Wind database
After	A dummy variable that equals one for the years after inward M&As, and 0 otherwise.	
Productivity	Log value of the ratio of a firm sales to employee at the end of year	Wind database
R&D expenditure	A dummy variable equals to 1 if a firm has a positive R&D expenditure at the end of year	Wind database
Country level variables		
GDP growth	Annual percentage growth rate of GDP in foreign countries.	World Bank
Domestic credit	Common logarithm value of domestic credit provided by financial sector (% of GDP)	World Bank

Notes: This table presents the definition and sources of the variables used in empirical regressions. Firm level data and country level data are collected at the annual frequency.

Table 2: Sample Characteristics

Panel A: Year			Panel B: Ownership		
Year	Number	Percent	Ownership Type	Number	Percent
1994	1	0.1	Central SOE	230	25.2
1996	1	0.1	Local SOE	326	35.7
1997	4	0.4	Private	283	31.0
1998	2	0.2	Foreign	75	8.2
1999	11	1.2	**Total**	**914**	**100**
2000	16	1.8	**Panel C: Industry Type**		
2001	14	1.5	Manufacturing industry	461	50.4
2002	26	2.8	Real Estate Industry	112	12.3
2003	19	2.1	Transportation, Storage and Post	76	8.3
2004	68	7.4	Retail and Wholesale Industries	71	7.8
2005	97	10.6	Financial Industry	46	5.0
2006	123	13.5	Information Transmission, Computer Service and Software Industries	32	3.5
2007	86	9.4	Power, gas and water	28	3.1
2008	140	15.3	Mining	20	2.2
2009	103	11.3	Conglomerate	20	2.2
2010	93	10.2	Leasehold and Business Service	17	1.9
2011	110	12.0	Constructions	13	1.4
Total	**914**	**100**	Agriculture	9	1.0
			Water Conservancy, Environment and Public Facility Management	4	0.4
			Culture, Sports and Entertainment	3	0.3
			Scientific Research, Technology Service and Geological Prospecting	1	0.1
			Hoteling and Catering	1	0.1
			Total	**914**	**100**

Notes: This table presents the distributions of inward M&A by ownership, year and industry for the full sample.

Table 3: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TA	6332	9.586	0.741	8.164	12.227
I	6331	0.118	0.621	-2.629	2.910
CF	6325	0.843	0.671	0.024	4.468
Tobin's Q	6012	1.542	1.390	0.070	7.859
Leverage	6121	1.375	0.704	-1.146	4.643
Expense to revenue	6300	-0.018	0.447	-1.439	12.563
DWW	6398	0.500	0.500	0	1
Central SOE	6398	0.201	0.401	0	1
Local SOE	6398	0.306	0.461	0	1
Foreign	6398	0.082	0.274	0	1
Private	6398	0.258	0.438	0	1
Productivity	5975	5.953	0.512	4.767	7.703
R&D expenditure	6398	0.240	0.427	0	1
GDP growth	5873	2.971	3.316	-5.638	9.779
Domestic credit	5831	2.215	0.167	1.784	2.542
After	6398	0.571	0.495	0	1

Notes: This table presents summary statistics of the full sample.

Table 4: Investment-cash flow sensitivity of Chinese firms before foreign acquisitions

	(1)	(2)	(3)	(4)
C	0.0605	0.0925	0.0920	0.1029
	(0.054)	(0.112)	(0.112)	(0.112)
CF	0.0321***	0.0317***	0.0306***	0.0336***
	(0.006)	(0.004)	(0.004)	(0.004)
Tobin's Q	0.0049**	0.0044**	0.0047**	0.0047**
	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	0.0045***	0.0044***	0.0044***	0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)
Expense to revenue	-0.0491***	-0.0581***	-0.0560***	-0.0576***
	(0.025)	(0.008)	(0.008)	(0.008)
Central SOE	0.0650***			
	(0.009)			
Local SOE		0.0231***		
		(0.007)		
Private			-0.0323***	
			(0.007)	
Foreign				-0.0242**
				(0.012)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	2517	2517	2517	2517
R^2	0.169	0.150	0.153	0.148

Notes: This table presents the empirical results of investment-cash flow sensitivity of Chinese firms before foreign acquisitions by OLS regression. The dependent variable is gross investment to total assets. The definition and sources of the other variables can be seen in Table 1. We have controlled for both industry and year effects in each model. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity (*), (**) and (***) indicate that the coefficients are significant at the 10%, 5% and 1% level. We use Stata 11 for the analysis.

Table 5 Investment-cash flow sensitivity for firms partitioned by level financial constraints before foreign acquisitions

	(1)	(2)	(3)	(4)
C	0.0110	0.0407	0.0383	0.0484
	(0.062)	(0.110)	(0.110)	(0.111)
CF	0.1250***	0.1244***	0.1266***	0.1270***
	(0.016)	(0.013)	(0.013)	(0.013)
DWW	0.0929***	0.1027***	0.1001***	0.1019***
	(0.012)	(0.011)	(0.011)	(0.011)
DWW*CF	-0.1115***	-0.1135***	-0.1160***	-0.1144***
	(0.017)	(0.013)	(0.013)	(0.014)
Tobin's Q	0.0055**	0.0052***	0.0054***	0.0054***
	(0.002)	(0.002)	(0.002)	(0.002)
Leverage	0.0045***	0.0044***	0.0044***	0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)
Expense to revenue	-0.0430*	-0.0497***	-0.0484***	-0.0496***
	(0.024)	(0.008)	(0.008)	(0.008)
Central SOE	0.0597***			
	(0.009)			
Local SOE		0.0222***		
		(0.007)		
Private			-0.0307***	
			(0.007)	
Foreign				-0.0195*
				(0.012)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	2517	2517	2517	2517
R^2	0.194	0.179	0.181	0.176

Notes: This table presents results of investment-cash flow sensitivity of Chinese firms partitioned by level financial constraints before inward M&As by OLS regression. Dependent variable is gross investment to total assets. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity. (*), (**) and (***) indicate that the coefficients are significant at the 10%, 5% and 1% level.

Table 6 Investment-cash flow sensitivity of Chinese firms after foreign acquisitions

	(1)	(2)	(3)	(4)
C	-0.6819	-0.6998	-0.6839	1.9266
	(0.832)	(0.841)	(0.834)	(1.249)
CF	-0.7897	-0.7925	-0.7850	-0.6073
	(0.564)	(0.565)	(0.559)	(0.439)
Tobin's Q	0.4238	0.4238	0.4238	0.4251
	(0.465)	(0.465)	(0.465)	(0.465)
Leverage	0.0102*	0.0085	0.0088	0.0108
	(0.006)	(0.007)	(0.006)	(0.007)
Expense to revenue	0.9082	0.8199	0.8032	0.7453
	(0.646)	(0.641)	(0.639)	(0.633)
Central SOE	0.6612			
	(0.427)			
Local SOE		0.4033		
		(0.267)		
Private			-0.0031	
			(0.138)	
Foreign				-2.7315
				(1.932)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	3443	3443	3443	3443
R^2	0.283	0.283	0.283	0.283

Notes: This table presents the empirical results of investment-cash flow sensitivity of Chinese firms after foreign acquisitions by OLS regression. The dependent variable is gross investment to total assets. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity (*), (**) and (***) indicate that the coefficients are significant at the 10%, 5% and 1% level.

Table 7 Investment-cash flow sensitivity for firms partitioned by level financial constraints after foreign acquisitions

	(1)	(2)	(3)	(4)
C	-0.0978	-0.1160	-0.1082	2.4023
	(0.813)	(0.817)	(0.817)	(1.698)
CF	-2.4885	-2.4450	-2.3991	-2.2697
	(2.389)	(2.369)	(2.340)	(2.267)
DWW	-0.3530	-0.2183	-0.2107	-0.4374
	(0.961)	(0.932)	(0.922)	(0.987)
DWW*CF	1.7020	1.6304	1.5946	1.6778
	(2.203)	(2.176)	(2.157)	(2.185)
Tobin's Q	0.4237	0.4237	0.4237	0.4250
	(0.465)	(0.465)	(0.465)	(0.465)
Leverage	0.0004	-0.0014	-0.0009	0.0014
	(0.014)	(0.015)	(0.015)	(0.014)
Expense to revenue	0.9574	0.9170	0.8903	0.7656
	(0.627)	(0.624)	(0.621)	(0.609)
Central SOE	0.6410			
	(0.420)			
Local SOE		0.4627		
		(0.306)		
Private			0.0375	
			(0.131)	
Foreign				-2.6475
				(1.885)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	3443	3443	3443	3443
R^2	0.283	0.283	0.283	0.283

Notes: This table presents the empirical results of investment-cash flow sensitivity of Chinese firms partitioned by level financial constraints after foreign acquisitions by OLS regression. The dependent variable is gross investment to total assets. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity (*), (**) and (***) indicates that the coefficients are significant at the 10%, 5% and 1% level.

Table 8: The effect of foreign acquisitions on R&D expenditure of Chinese target firms for full sample

	(1)	(2)	(3)	(4)
C	-3.1039***	-3.1492***	-3.2214***	-3.7556***
	(0.409)	(0.423)	(0.429)	(0.433)
After	0.0643***	0.0638***	0.0519***	0.0397***
	(0.010)	(0.010)	(0.011)	(0.011)
CF	0.0463***	0.0463***	0.0489***	0.0496***
	(0.007)	(0.007)	(0.007)	(0.007)
TA	0.7232***	0.7323***	0.7488***	0.7206***
	(0.081)	(0.083)	(0.084)	(0.084)
TA*TA	-0.0380***	-0.0385***	-0.0393***	-0.0379***
	(0.004)	(0.004)	(0.004)	(0.004)
Leverage	-0.0001	-0.0001	0.0007	0.0009
	(0.001)	(0.001)	(0.002)	(0.002)
Age	-0.0081***	-0.0080***	-0.0084***	-0.0087***
	(0.001)	(0.001)	(0.001)	(0.001)
Expense to revenue		-0.0056	-0.0036	-0.0037
		(0.010)	(0.011)	(0.011)
GDP growth			0.0032*	0.0098***
			(0.002)	(0.002)
Domestic credit				0.3018***
				(0.032)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	6114	6096	5607	5565
R^2	0.281	0.281	0.287	0.301

Notes: This table present the empirical results of foreign acquisition effects on target firm investment involved in inward M&As by OLS regression. The dependent variable is a dummy variable that equals to 1 if a firm has positive R&D expenditure, and 0 otherwise. *After* is a dummy variable that equals one for the years after inward M&As, and 0 otherwise. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity (*), (**) and (***) indicates that the coefficients are significant at the 10%, 5% and 1% level.

Table 9: The effect of foreign acquisitions on productivity of Chinese target firms for full sample

	(1)	(2)	(3)	(4)
C	-2.5527**	-0.6172	-0.6079	-0.5449
	(1.009)	(1.267)	(1.288)	(1.289)
After	0.0398***	0.0436***	0.0391***	0.0383***
	(0.013)	(0.013)	(0.014)	(0.014)
CF	0.1852***	0.1831***	0.1780***	0.1789***
	(0.008)	(0.008)	(0.008)	(0.008)
TA	1.5136***	1.1540***	1.1336***	1.1304***
	(0.199)	(0.252)	(0.256)	(0.256)
TA*TA	-0.0648***	-0.0487***	-0.0473***	-0.0471***
	(0.010)	(0.012)	(0.013)	(0.013)
Leverage	0.0010	0.0010	0.0006	0.0006
	(0.001)	(0.001)	(0.001)	(0.001)
Age	-0.0051***	-0.0039**	-0.0006	-0.0005
	(0.002)	(0.002)	(0.002)	(0.002)
Expense to revenue		-0.1842***	-0.1790***	-0.1777***
		(0.034)	(0.035)	(0.035)
GDP growth			0.0012	0.0006
			(0.002)	(0.002)
Domestic credit				-0.0263
				(0.038)
Year effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Observations	5831	5828	5359	5324
R^2	0.253	0.273	0.275	0.276

Notes: This table present the empirical results of foreign acquisition effects on target firm investment involved in inward M&As by OLS regression. The dependent variable is sales per employee. *After* is a dummy variable that equals one for the years after inward M&As, and 0 otherwise. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity (*), (**) and (***) indicates that the coefficients are significant at the 10%, 5% and 1% level.

Table 10: The effect of foreign acquisitions on cash holdings of Chinese target firms

	(1)	(2)	(3)	(4)	(5)	(6)
C	0.1621***	-0.5522**	-0.5352**	-0.2781	-0.3171	-0.2273
	(0.023)	(0.267)	(0.268)	(0.265)	(0.280)	(0.281)
After	-0.0093***	-0.0089***	-0.0093***	-0.0068**	-0.0073**	-0.0075**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
CF	0.0234***	0.0223***	0.0222***	0.0217***	0.0209***	0.0207***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
TA	-0.0091***	0.1338**	0.1349***	0.0924*	0.1009*	0.1061*
	(0.002)	(0.052)	(0.052)	(0.051)	(0.054)	(0.055)
Tobin's Q	0.0004***	0.0005***	0.0005***	0.0005***	0.0005***	0.0005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TA*TA		-0.0070***	-0.0071***	-0.0055**	-0.0059**	-0.0062**
		(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Leverage			-0.0009***	-0.0009***	-0.0011***	-0.0011***
			(0.000)	(0.000)	(0.000)	(0.000)
Expense to revenue				-0.0632***	-0.0652***	-0.0651***
				(0.014)	(0.016)	(0.016)
GDP growth					0.0004	-0.0010
					(0.001)	(0.001)
Domestic credit						-0.0294***
						(0.010)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5940	5940	5905	5895	5424	5383
R^2	0.0874	0.0912	0.0927	0.129	0.131	0.132

Notes: This table presents the empirical results of cash holdings of Chinese firms for full sample by OLS regression. The dependent variable is cash to total assets ratio. The definition and sources of the other variables can be seen in Table 1. We have controlled both industry and year effects in each model specification by adding year and industry dummies. The industry dummies are derived on the basis of a one-digit China Securities Regulatory Commission (CSRC) code collected from WIND database. The standard errors are presented in parentheses. Standard errors are robust to heteroscedasticity. (*), (**) and (***) indicates that the coefficients are significant at the 10%, 5% and 1% level.